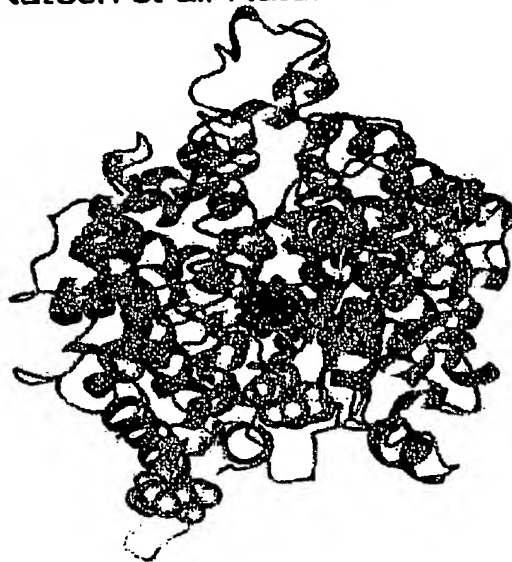


FIG. 1

**tACE:** Natesh et al. Nature 421:551, 2003



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FIG. 2

## tACE as redox sensor

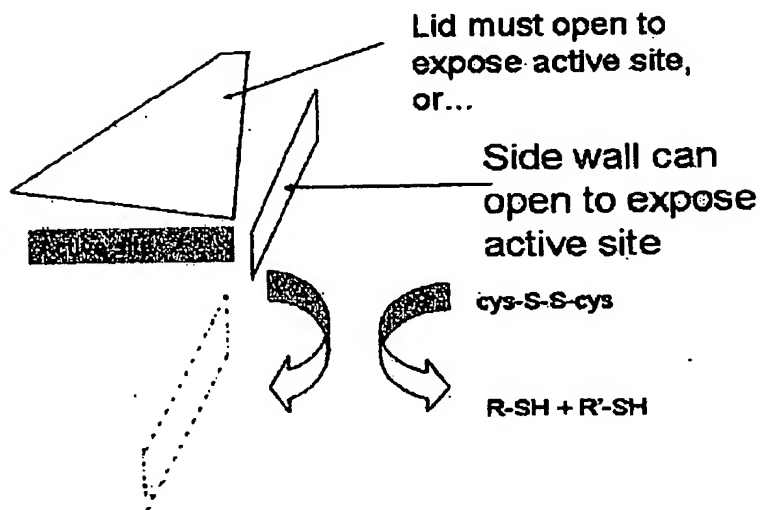
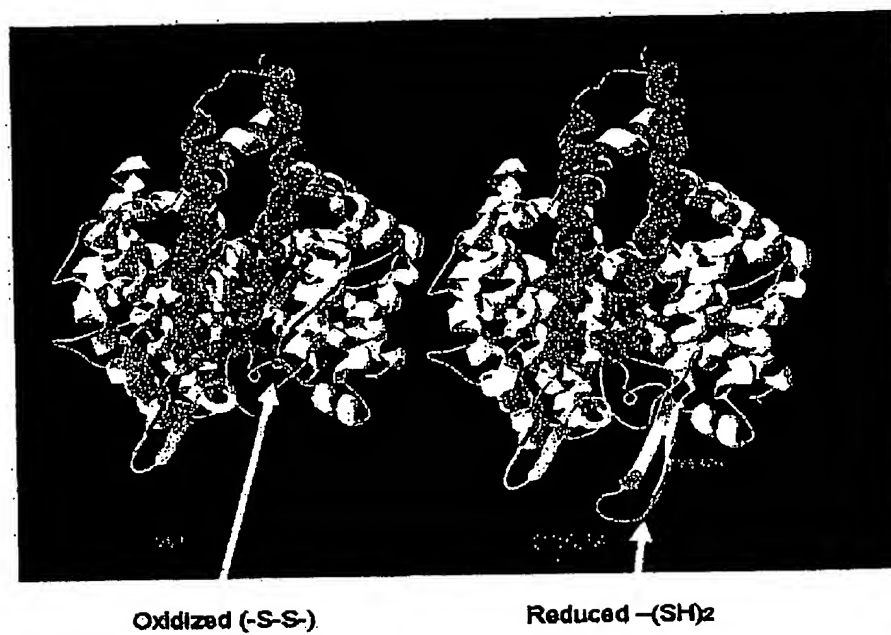
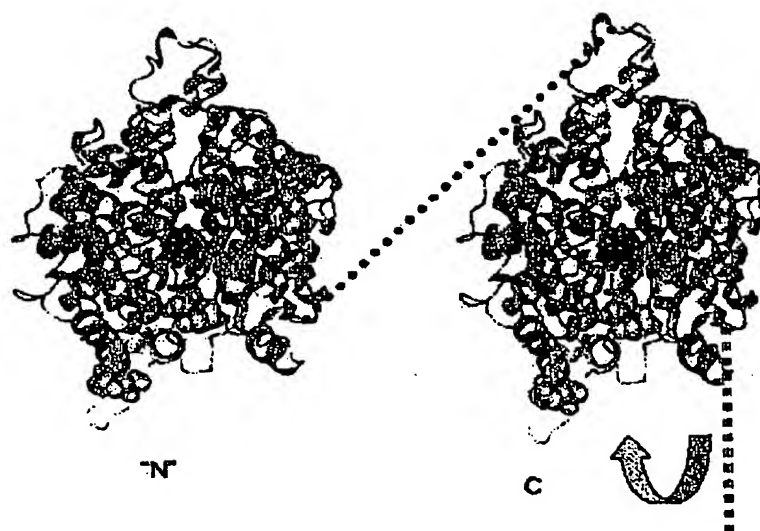


FIG. 3



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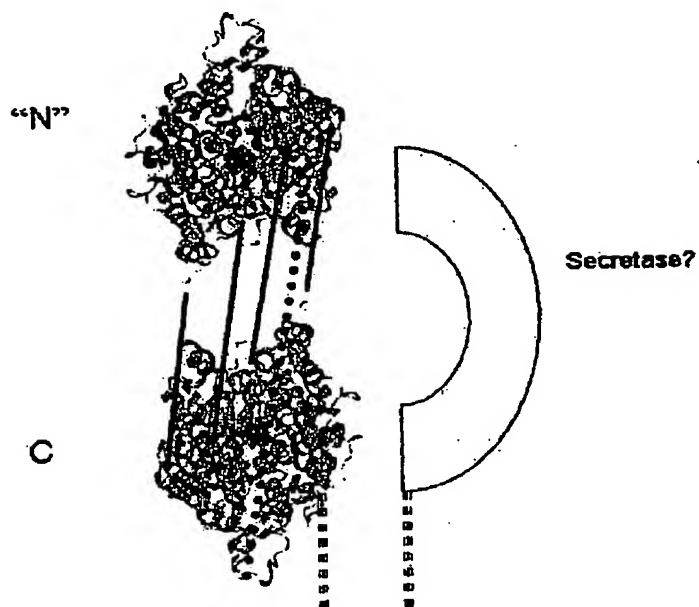
FIG. 4A



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FIG. 4B

Note: "Tongue-in-groove" fit



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FIG. 5

## sACE: Dimerization via a Disulfide Zipper

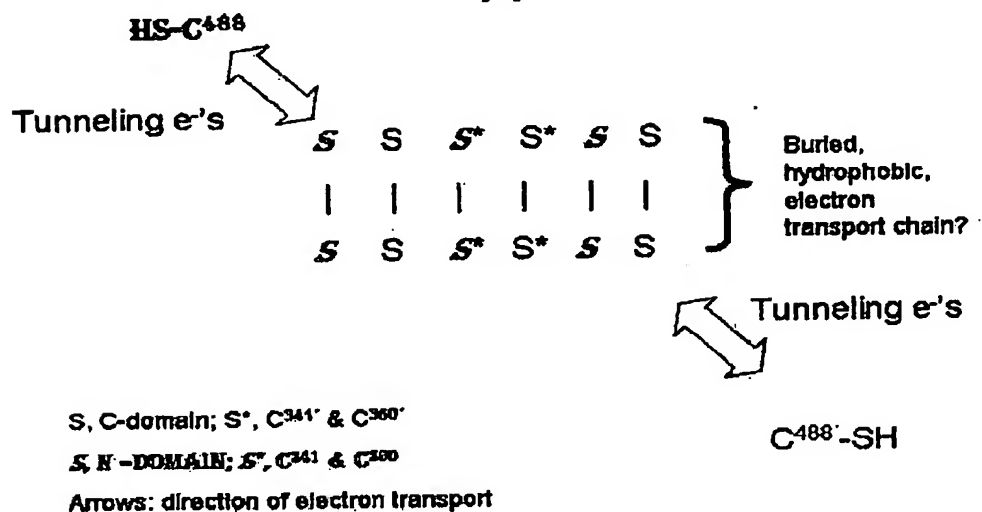
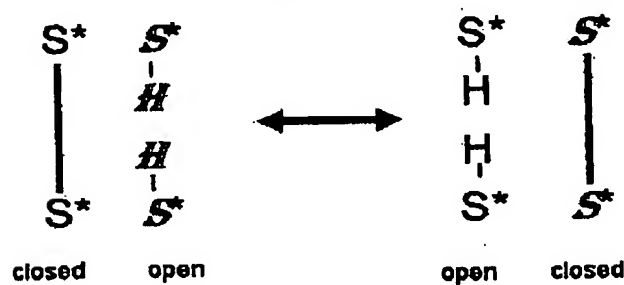


FIG. 6

## sACE: a reciprocating enzyme with higher $k_{cat}$ than tACE?

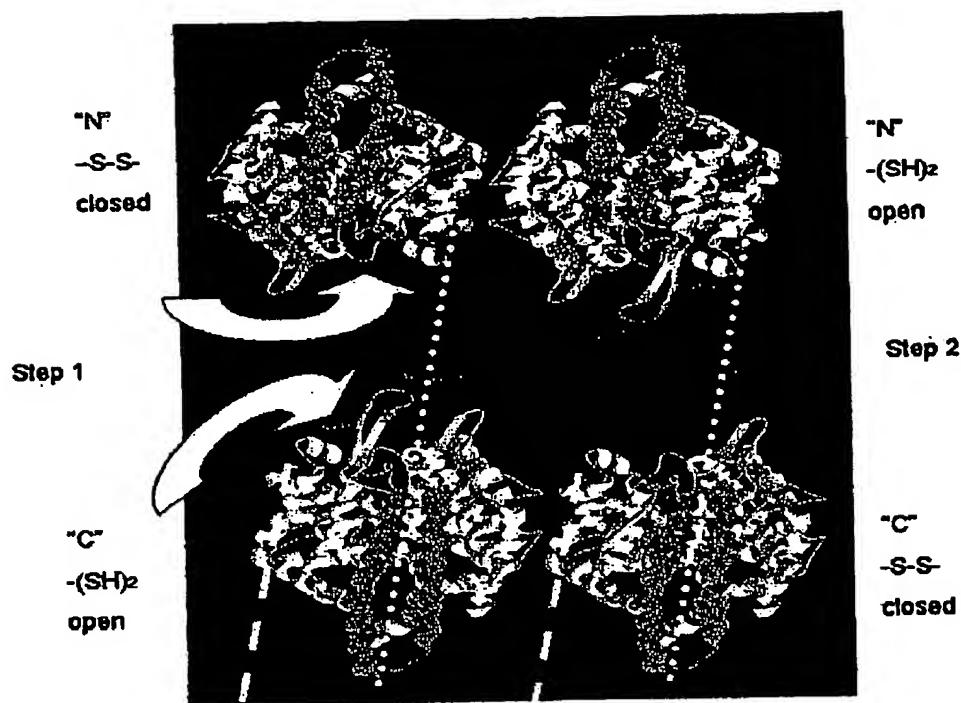


Activated by a single pair of electrons

S\*, C-domain cysteine 341' or 360'

S\*, H-DOMAIN CYSTEINE 341 OR 360

FIG. 7



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FIG. 8

## O<sub>2</sub> Sensing by Hb; Readout by ACE

1.  $[\text{Fe-NO}]\text{-Hb-SH} \leftrightarrow [\text{Fe-O}_2]\text{-Hb-S-NO}$
2.  $[\text{Fe-O}_2]\text{-Hb-S-NO} \leftrightarrow [\text{Fe}]\text{-Hb-SH} + \text{albumin-S-NO}$
3.  $\text{albumin-S-NO} + \text{ACE-SH} \leftrightarrow \text{albumin-SH} + \text{ACE-S-NO}$   

active
inactive

---

NET: Oxygenation  $\rightarrow \uparrow \text{NO}, \downarrow \text{A II} \rightarrow$   
 vasodilation with multiplicative gain

FIG. 9

# sACE: Inactivation by NO

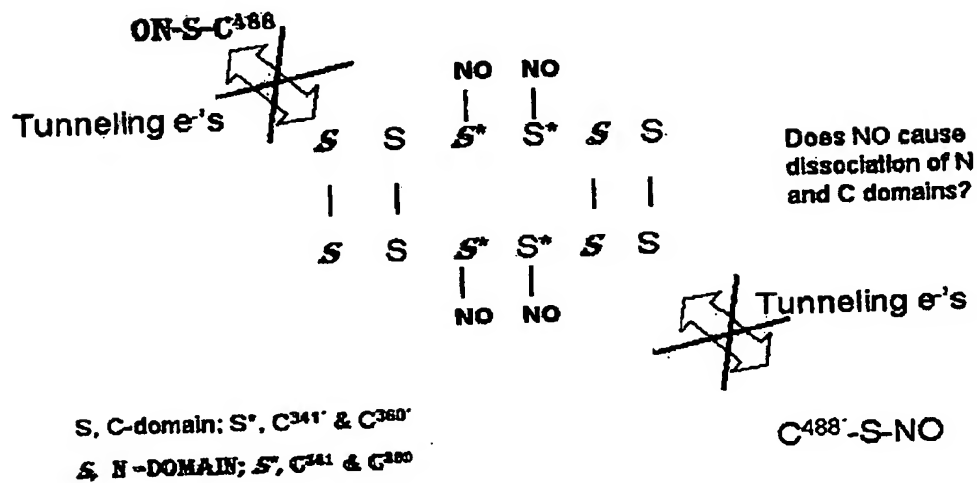
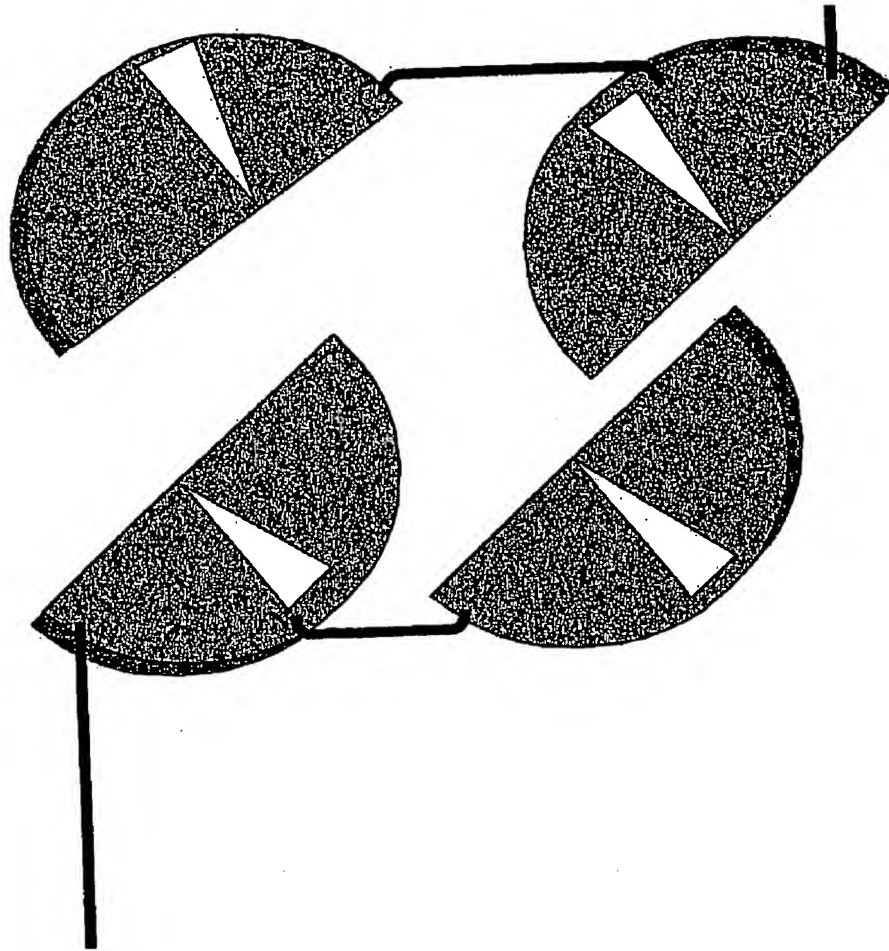


FIG. 10

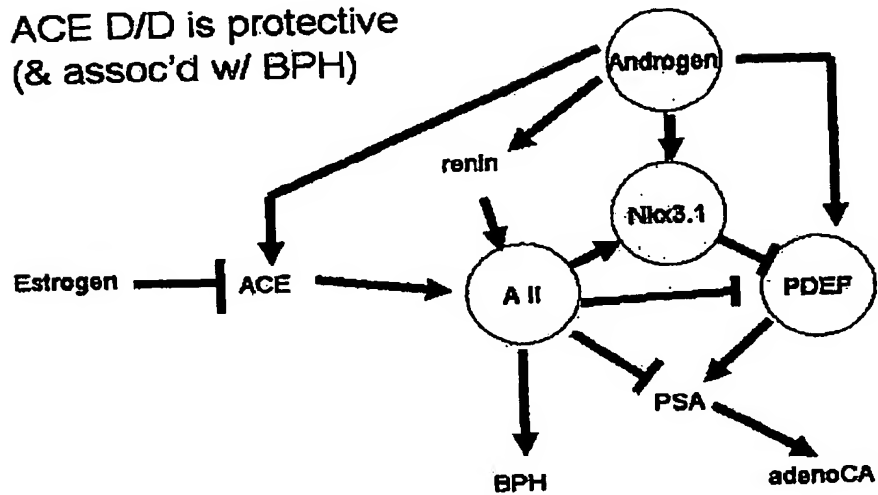


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FIG. 11

## Prostate Cancer in White Men

- ACE D/D is protective (& assoc'd w/ BPH)



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